

BAY AREA AIR QUALITY MANAGEMENT DISTRICT
Memorandum

To: Chairperson Haggerty and Members
of the Board of Directors

From: William C. Norton
Executive Officer/APCO

Date: May 14, 2003

Re: Public Hearing to Consider Proposed New Regulation 12, Rule 11 ("Flare
Monitoring at Petroleum Refineries") and Approval of a Negative Declaration
pursuant to the California Environmental Quality Act

RECOMMENDED ACTION:

Staff recommends that the Board of Directors take the following actions:

- A) Hold a public hearing on the proposed rule;
- B) Continue the hearing until June 4, 2003.

At the June 4 hearing, staff will recommend that the Board take the following actions:

- C) Adopt proposed new Regulation 12, Rule 11, Flare Monitoring at Petroleum Refineries;
- D) Approve a Negative Declaration pursuant to the California Environmental Quality Act (CEQA) for this rule-making activity.

BACKGROUND

Proposed District Regulation 12, Rule 11: Flare Monitoring at Petroleum Refineries is intended to implement control measure SS-15 from the Bay Area 2001 Ozone Attainment Plan. This new rule will require refineries to monitor the volume and composition of gases burned in refinery flares, to calculate flare emissions based on this data, to determine the reasons for flaring, to provide video monitoring of flares, and to report all of this information to the District. The rule will lead to much more accurate estimates of flare emissions, will allow the District to refine its emission inventory for flaring, and will provide information that is likely to lead to reductions in flaring.

For monitoring of the volume of gas directed to flares, the rule establishes range and accuracy requirements that, at present, can be met only by ultrasonic flow monitors. These monitors are called time-of-flight (TOF) ultrasonic monitors. This technology is the best available technology for measuring gas flow for flares.

For monitoring of flare gas composition, the rule allows two primary options: (1) collection of samples for subsequent lab analysis, or (2) use of continuous analyzers that sample gas and analyze it automatically. For the first option, samples can be collected manually or with

an auto-sampler. Samples may also be integrated samples (samples collected over time to pick up variation in composition). For the second option, several continuous analyzer technologies are available: flame ionization detectors (FID), non-dispersive infrared (NDIR) spectrophotometry, and gas chromatography (GC). These methods are widely used by industry and by regulators, but have never been used on flare headers. The rule establishes appropriate methods and procedures for each technology.

The rule allows the two options for composition monitoring, sampling and continuous analyzers, for a number of reasons:

- Each has advantages and disadvantages that may dictate one over the other for the specific flare in question.
- Continuous analyzers, though desirable because of the continuous data they can provide, have not yet been used to monitor flare vent gas. They will require complex and costly sample conditioning systems that may require considerable maintenance due to the variability of materials vented to the flare and the potential for contamination and interference.
- Many flares within the District are rarely used (some have not had any flaring in several years). It would not make sense to impose complex monitoring on these flares when manual sampling should suffice if there is ever a release.

The rule represents a compromise, allowing a method that is known to work (sampling) while encouraging a method that the District would like to see proven in practice (continuous analyzers). This ensures that the rule will work and avoids the risk of rule failure that would come from mandating only continuous analyzers and the missed opportunity that might come from mandating only sampling. District staff expect that the result will be the use of continuous analyzers on some flares and various types of sampling on others.

The proposed rule requires monitoring data, including video images, to be submitted to the District in a monthly report that is due within 30 days after the end of each month. The rule also requires a semi-annual report comparing flow monitoring data for a period of time with a set of data for the same period derived by other methods. This is intended only as a rough check on the meters to catch major calibration or other errors: ultrasonic flow meters are far more accurate than any method proposed to check them.

The rule requirements would be imposed in steps. All refineries would have to start taking daily composition samples within 3 months (some are already doing so). Within 6 months, each refinery will have to have continuous flow monitors in place. In 9 months, each refinery will be required to monitor composition at more frequent intervals using sampling or continuous analyzers.

The proposed rule would apply to the 25 flares located at the five Bay Area refineries: ChevronTexaco in Richmond (9 flares), ConocoPhillips in Rodeo (2 flares), Valero in Benicia (3 flares), Tesoro in Avon (6 flares), and Shell in Martinez (5 flares). Two of the twenty-five are not in service. The cost of the monitoring equipment for a single flare is roughly \$200,000. The District has estimated the annual cost per flare, with equipment costs amortized over ten years and including operating and maintenance costs, to be \$50,000 per flare per year.

At the direction of the APCO/Executive Officer the staff put the development of this rule on a fast track. In developing this rule, the District relied on information and data gathered during the District's flare further study effort. In August 2002, District staff held a workshop in Martinez to discuss basic rule concepts. It began developing a draft rule in late 2002, and in March of this year we shared preliminary drafts of the rule with representatives from the five Bay Area refineries, the Western States Petroleum Association (WSPA), and Communities for a Better Environment (CBE).

In late March and early April, District staff held three community meetings to discuss rule concepts (these meetings were not intended to be workshops). The meetings were held in Richmond, Martinez, and Rodeo. Rule drafts have also been shared with ARB and EPA. After the meetings, the District revised the draft rule and allowed a written comment period from April 7-17, 2003. On April 18th, the District held a flare workgroup meeting involving refiners, WSPA, CBE, representatives of refinery trade unions, vendors of monitoring equipment, ARB staff, and District staff. The publicly noticed version of the rule was then prepared and sent to ARB on April 21st. On May 8th, the District conducted a second workgroup meeting with the same parties. After the second meeting, changes were proposed to the publicly noticed rule and were circulated among meeting participants.

Pursuant to the California Environmental Quality Act (CEQA), the District prepared an initial study to determine the potential environmental impacts of proposed Regulation 12, Rule 11. The study concluded that the proposed rule would not result in any significant environmental impacts.

CHANGES TO PROPOSED RULE AFTER PUBLICATION

Changes are proposed to the publicly noticed rule. These changes are a result of a large volume of written comments the District has received at the end of the comment period. (see Comments and Responses in the staff report).

The primary changes to the proposed rule are:

- A limited exemption from hydrocarbon composition monitoring is added for flares that exclusively burn flexi-coker gas (which has a very low hydrocarbon content and little variability).
- Rather than simply require reporting of raw data, a provision is added requiring the monthly report to include emission estimates based on specified flare efficiencies.
- The specifications for flow monitors are expanded to include accuracy requirements.
- The sampling trigger is modified to be identical to the South Coast AQMD trigger.
- Monitor downtime provisions have been modified to allow a grace period for new monitoring technologies that have not been used on flare headers.

CONCLUSIONS

The proposed rule represents a reasonable compromise that will provide the District with data in an arena where there is great concern, limited data, and significant speculation. Staff recommends that the Board conduct a hearing on May 21st but continue the hearing to June 4th to allow time for comments on the proposed changes to the rule. Because this is a new rule, because it contains a number of options, and because it encourages new applications of monitoring technologies, we expect that new issues will arise as we work to implement the

rule. Staff therefore recommends that we report to the Board within eighteen months of rule adoption about progress on implementation and on any necessary modifications to the rule.

Respectfully submitted,

William C. Norton
Chief Executive Officer

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Reviewed by: Peter Hess

Attachments:

1. Revised Rule Showing Changes from Publicly-Noticed Rule (Dated 5/15/03)
2. Proposed Publicly-Noticed Rule (Dated 4/21/03)
3. Staff Report
4. CEQA Negative Declaration and Initial Study